

**OFFICIAL**

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PATENT

10/616,340

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

|                                  |   |                       |
|----------------------------------|---|-----------------------|
| In re Application: Pierce et al. | ) | Group Art Unit: 1772  |
|                                  | ) |                       |
| Serial No. 09/265,225            | ) | Examiner: R. Dye      |
|                                  | ) |                       |
| Filed: March 10, 1999            | ) | Atty. Docket No. 1779 |
|                                  | ) |                       |

For: USE OF FOAMED ADHESIVES TO MAKE PAPER CORES OR TUBES FOR  
THE TISSUE/TOWEL INDUSTRY

**DECLARATION UNDER 37 C.F.R. § 1.131**

Commissioner for Patents  
Washington, D.C. 20231

Sir:

We, Peter D. Pierce, David W. Lydzinski and Christian E. Russell, hereby  
declare:

That we invented the subject matter claimed in subject application Serial No.  
09/265,225.

That we have read and understand the Office action, paper No. 7, and the  
Drummond et al. (U.S. Patent No. 6,135,346) patent applied therein.

That we understand that the Examiner has rejected claims 5, 7-13 and 15-20 under  
35 U.S.C. § 102 (e) as being anticipated by the Drummond patent, and has rejected  
claims 6 and 14 under 35 U.S.C. § 103 as being unpatentably obvious over the  
Drummond patent.

That the attached document is an invention disclosure documenting the subject invention, which document was prepared, executed and witnessed prior to the November 20, 1998 filing date of Drummond *et al.*

We further declare that all statements made herein of my own knowledge are true and that all statement made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by a fine or imprisonment or both under 1001 of Title 18 of the United States Code and such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

9/25/01  
Date

Peter D. Pierce  
Peter D. Pierce

Sept. 25, 2001  
Date

David W. Lydzinski  
David W. Lydzinski

9/25/01  
Date

Christian E. Russell  
Christian E. Russell

## CONFIDENTIAL

The information contained in this Invention Disclosure is confidential and proprietary to National Starch and Chemical Company and is to be maintained and used solely for the benefit of National Starch and Chemical Company.

## INVENTION DISCLOSURE

TITLE: Use of Foamed Adhesives to Make Paper Cores or Tubes for the Tissue/Towel Industry

## I. The Invention

## A. Description of the Invention

It was determined that foaming waterbased adhesives provided an unexpected benefit in the construction of paper cores or tubes for towel and tissue rolls. The addition of small, finely dispersed air bubbles to the adhesive allowed a much wider operating window of adhesive application amount during changes in production speed. Testing at a tissue/towel corewinding equipment manufacturer confirmed that winders could be run at 100% maximum line speed with no adjustments to application amount. This was observed using adhesives with up to 40% added foam. Previously, production equipment could only be run at 70-90% maximum line speeds before application adjustments were necessary. Conventional and modified core/tubewinding adhesives were tested. Modification consisted of removing any defoamer from the product, which inhibits foam generation.

## B. Purpose of the Invention

The purpose of this study was to evaluate the effects of using foamed adhesives to produce paper cores or tubes used in the tissue/towel industry. This application was not identified as a potential market for foamed adhesives prior to this work. Foamed adhesives should benefit tube/core manufacturers in terms of reduced adhesive usage and the ability to add less moisture to the construction. Existing high speed tissue/towel corewinding equipment cannot change production speeds without adjustments to adhesive application amount. At high speeds, too much adhesive can be applied, resulting in 'soft' cores (due to excessive moisture from adhesive) and web breaks. If adhesive amount is reduced to compensate for the increased line speeds, problems occur when the machine is run at slow speeds, due to too little open time. Thought was that foamed adhesives, with their reduced adhesive content per a given volume, would allow high speeds to be obtained with no adjustments to application amount. At slow speeds, these adhesives would 'sit up' on the surface of a substrate and allow acceptable production.

## C. Attachments

Internal and external reports describing tests at a corewinding equipment manufacturer, lab notebook page with formulas.

## D. Preferred Embodiment

Since we're dealing with a process, not sure what needs to be entered here. The adhesives we worked with were standard products with or without formula modifications. These modifications entail the removal of defoamer and/or the addition of surfactants to aid in foam generation. For example, a polyvinylacetate-based adhesive would not generate consistent foam until the defoamer was totally removed from the formula. Another formula needed reduced level of defoamer to successfully foam. Attached is a brief summary of formulations used during the trial. More details can be provided as needed.

## II. Literature Search Details

Keywords used in search: PAPER, TUBE, CORE, FOAM

Searched the following:

Derwent WPI, 1963-19 [REDACTED]  
Chemical Abstracts (CALPUS), 1957-19 [REDACTED]  
U.S. Patents Full Text, 1971-199 [REDACTED]  
Japio, Oct 1976-19 [REDACTED]  
Claims(R)/US Patent, 1950-19 [REDACTED]  
European Patents, 1978-19 [REDACTED]  
Claims(R)/Reass. & Reexam., 19 [REDACTED]  
Chinese Patents ABS, 1985-19 [REDACTED]  
Inpadoc/Fam. & Legal Stat., 19 [REDACTED]

Result: Nothing of relevance found

## III. Inventorship

Peter D. Pierce - Washington Crossing, Pennsylvania, U.S. Citizen

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A  
LTM  
1/19

David W. Lydzinski - Belle Mead, New Jersey, U.S. Citizen  
Christian E. Russell - High Bridge, New Jersey, U.S. Citizen

IV. Dates and Proof of Conception and Reduction to Practice  
Idea was first concived on [REDACTED]

V. Means to Detect Infringement

Determiniation if foaming is being used to reduce adhesive application variation as winding speeds increase.

VI. Disclosures

Only disclosure to a third party was discussions during our [REDACTED] trial at the equipment manufacturer, Paper Converting Machine Corporation.

VII. SBU, Marketing Manager or Technical Director

Marketing Manager: Scott Edris

Technical Director: George Hespe, Bob Humphreys

VIII. Signatures and Comments

Inventors:

Name & Signature Peter D. Pierce

Home Address

Washington Crossing, PA 109 Walker Road

Citizenship

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Dated: [REDACTED]

Name & Signature David W. Lydzinski

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Dated: [REDACTED]

Witness:

Read and understood by:

Dated: [REDACTED]

Technical Director:

Dated: [REDACTED]

Comments:

Highly relevant to adhesives for paper bonding in general.